



EXPLANATION OF SIGNIFICANT DIFFERENCES

H.O.D. LANDFILL ANTIOCH, ILLINOIS

August, 2003

INTRODUCTION

The H.O.D. Landfill Superfund Site ("H.O.D. Landfill Site" or "the Site") is located within the eastern boundary of the Village of Antioch, Lake County, Illinois. The Site was used as a landfill from approximately 1963 until 1984. Various solid and liquid industrial wastes, including hazardous substances, as well as municipal wastes, were landfilled at the Site. Waste Management of Illinois, Inc. (WMII) and the Village of Antioch are the owners of the Site.

On September 28, 1998, the Regional Administrator of the U.S. Environmental Protection Agency (EPA) signed the Record of Decision (ROD) for the Site. The remedy selected for the Site was based on the remedial investigation/ feasibility study (RI/FS), which was completed in June 1998. The Illinois Environmental Protection Agency (IL EPA) concurred with the remedy selected in the ROD, and supports this Explanation of Significant Differences (ESD) for the H.O.D. Landfill Site. The selected remedy in the ROD required, in part, upgrading existing fencing, adding additional fencing to completely enclose the Site, posting warning signs, and installing locking gates to ensure the continued integrity of the waste containment remedy.

On April 14, 1999, U.S. EPA issued a CERCLA Section 106(a) Unilateral Administrative Order (UAO) to five Potentially Responsible Parties (PRPs), including, but not limited to WMII and the Village of Antioch. Pursuant to the UAO, WMII implemented the remedy at the Site, except for the institutional controls and Site access restrictions portions of the remedy.

In August 2003, WMII conducted a post-closure risk assessment, and announced the results in a report entitled Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan, August 2003. Data in the report revealed that a portion of the original remedy from the 1998 ROD, requiring Site access restrictions, could be modified and still be protective of human health, welfare and the environment. The report further presented several potential reuse scenarios and concluded that the potential final end uses would not pose unacceptable risks, provided that the integrity of the existing remedy and groundwater use restrictions are maintained. Potential reuse scenarios for the Site include recreational fields, playgrounds, off-leash dog areas, non-motorized trails, an archery range, model airplane flying areas, a golf driving range, nature area/interpretive walking areas, a picnic area (tables only), special events for concerts or festivals. By modifying the original remedy regarding fencing, gates and signs, through this ESD, the Site can be put into productive reuse while the integrity of the remedy is upheld to remain protective of human health and the environment.

The purpose of this ESD is to modify only that part of the original remedy from the ROD, involving fencing, signs, and gates. The requirement for restrictive covenants on the Site deed, as articulated in the original ROD, will be maintained to protect the integrity of the remedy, as well as limit certain Site use and development. Such restrictive covenants will notify a potential purchaser of the property of the past landfill activities and will assert that the land use must be

restricted to ensure the continued integrity of the waste containment remedy. The original ROD noted that use of the groundwater in the vicinity of the Site is prohibited by Village of Antioch ordinance; this ESD will not affect the prohibitions on groundwater use, as regulated by the Village's ordinances.

Therefore, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117 (c) and the National Contingency Plan (NCP) section 300.435(c)(2)(i), the U.S. EPA is publishing this ESD.

This ESD will become a part of the H.O.D. Landfill Administrative Record (NCP 300.825 (a)(2)), which is available for review at the Antioch Public District Library in Antioch, IL and at U.S. EPA Region 5 offices in Chicago, IL.

I. SUMMARY OF SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The H.O.D. Landfill Site consists of approximately 51 acres of landfilled area that is located on a parcel of land that is roughly 121.5 acres in size. Although the landfill area is continuous, it consists of two separate landfill areas, identified as the "old landfill" and the "new landfill." The "old landfill" consists of 24.2 acres situated on the western third of the property. The "new landfill" consists of 26.8 acres located immediately east of the "old landfill." Permitted waste disposal activities began at the Site in approximately 1963 and continued through approximately 1984. According to Waste Management of Illinois, Inc.(WMI), solvents, heavy metals, and cutting and hydraulic oils, in addition to municipal waste, were disposed of at the Site. The types of chemicals and compounds associated with the above-mentioned hazardous wastes generally included hazardous metals, volatile organic compounds (VOCs), pesticides, and polychlorinated biphenyls (PCBs). The primary threat to human health, welfare and the environment, posed by this Site is from vinyl chloride in the groundwater that could potentially be ingested.

Remedial action components of the selected remedy presented in the 1998 ROD include, but are not limited to the following activities:

- A. Institutional controls in the form of Village of Antioch ordinances that reduce exposure to Site contaminants by requiring residents to connect to the municipal water supply system, and by prohibiting the installation of private wells within Village limits.
- B. Access restrictions that include upgrading the existing fencing, constructing new fencing to completely enclose the Site, posting warning signs, and installing locking gates.
- C. Restrictive covenants on deeds to the Site that will ensure the continued integrity of the waste containment remedy by preventing or limiting Site use and development.

- D. Waste cap improvements including: removing vegetation; stockpiling topsoil to be reused as vegetation layer soils; consolidating the off-property waste at the northern edge of the "old landfill" onto Site property; regrading, placing and compacting the clay soils; placing the un-compacted, vegetative layer soils; and re-establishing the vegetation. The cap is comprised of two feet of compacted clay with one foot of clean topsoil above to support vegetation.
- E. Enhanced gas collection and treatment requiring trenching in areas of the Site for placement of pipe and new wells, placement of backfill around these new features, localized cap reconstruction, and construction of the blower and flare station.
- F. Enhanced leachate collection, including removal of the cap in areas of pipe placement, installation of additional leachate/gas extraction wells and header piping, backfilling, relocating of excavated waste, and reconstruction of the cap.
- G. Untreated leachate will be pumped directly from the collection system and transported via tanker trucks to the publicly owned treatment works for treatment under an industrial discharge permit for the Site.
- H. Monitored natural attenuation for groundwater in surficial sand, and the deep sand and gravel aquifers located beneath the Site, and the installation and monitoring of groundwater wells downgradient of the Site.

In August of 2003, WMII completed an exposure pathway analysis and risk assessment to assess potential human health and environmental exposures and risks associated with potential recreational uses of the H.O.D. Landfill Site. This ESD summarizes the results of the August 2003, exposure pathway analysis and risk assessment and explains the rationale for the refinement of the access restrictions from the 1998 ROD.

II. DIFFERENCES AND THE BASES FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCES

The August 2003, exposure pathway analysis and risk assessment provided the basis for the modification of the access restrictions that were required as a part of the 1998 ROD. The document presents several potential final end uses for the Site, that were identified by U.S. EPA with community involvement. Such end uses include the following: recreational fields, playgrounds, off-leash dog areas, non-motorized trails, an archery range, model airplane flying areas, a golf driving range, nature area/interpretive walking areas, a picnic area (tables only), special events for concerts or festivals. It assessed human health and environmental exposures and quantified risks associated with recreational uses in the H.O.D. Landfill Site by evaluating potential exposure pathways for human and ecological receptors, screening chemicals associated with potential exposure pathways to determine potential chemicals of concern (COCs) for further risk assessment, re-evaluating toxicity levels for COCs identified in the January 1997 RI/FS, and

evaluating uncertainties of the exposure pathway analysis and risk screening process. It also included screening chemicals associated with potential exposure pathways to determine potential chemicals of concern (COCs) for further risk assessment, re-evaluation of toxicity levels for COCs identified in the January 1997 RI/FS, and evaluating uncertainties of the exposure pathway analysis and risk screening process. The exposure pathway analysis and risk assessment revealed results that support and justify modification of the original access restrictions that were set forth in the ROD. The results of the August 2003, exposure pathway analysis and risk assessment are as follows:

- A. The existing remedy including landfill cap maintenance, landfill gas control and destruction, and leachate collection, treatment and disposal, prevents potential exposure pathways or site-related chemicals from posing unacceptable risks to Site users. In addition, because existing remedial components prevent potential exposure to ecological populations, a quantitative risk evaluation is not necessary.
- B. The clean cover soil that was added as part of the remedial action limits exposure to Site related chemicals from contact with surface soil. If contact did occur, risks from chemicals in soil would be below levels of concern.
- C. The landfill gas and the leachate collection system (negative pressure vapor extraction) is operated so that VOC concentrations in on-site air concentrations are expected to be very low and pose no risks to Site users.
- D. Chemicals detected in Sequoit Creek are at low concentrations and would not pose a risk to a child or teenager occasionally wading in the creek. Chemical concentrations are monitored periodically and are not expected to increase.

Based on the August 2003, exposure pathway analysis and risk assessment, the following significant differences to the H.O.D. Landfill ROD are proposed:

- A. Modifying access restrictions such that the existing fence will be removed from the 120-acre Site, and a fence restricting access to the operation and maintenance areas (including two maintenance buildings, and a leachate collection pad and tank), will be constructed and maintained around the operation and maintenance areas. In addition, warning signs will be placed around the fenced operation and maintenance areas, and locking gates will be installed in the fencing surrounding the areas. The gates will be kept locked when the areas are not being subject to maintenance or inspection activities.
- B. Securing any equipment outside of the fenced-in operation and maintenance area which is necessary to maintain the integrity of the existing landfill (flush-mounted gas/leachate collection vaults). In addition, locking mechanisms will be installed on the vault covers and will be kept locked when not being inspected or subject to operation and maintenance activities.

- C. Refining the restrictive covenants for the deeds to the Site to reflect uses that can be safely supported without affecting the integrity of the remedy, as documented in the Exposure Pathway Analysis and Risk Assessment for the HOD Landfill End Use Plan, August 2003.

III. RATIONALE FOR DELETING CERTAIN ACCESS RESTRICTIONS

The findings from the August 2003, exposure pathway analysis and risk assessment indicate that not all of the access restrictions, as expressed in the original 1998 ROD are necessary for protecting human health and the environment under certain quantified reuse scenarios.

To make this determination, the following three activities were performed:

- A. The results of the original baseline risk assessment for the Site which was originally reviewed and approved by EPA, were re-evaluated by WMII in 2003 and subsequently reviewed, analyzed and approved by U.S. EPA risk assessors in that same year.
- B. Post-remediation chemical concentrations associated with the potential exposure pathways were screened against published human health risk-based levels.
- C. Post-remediation chemical concentrations associated with the potential ecological exposure pathways were screened against current published ecological toxicity screening levels.

The exposure pathway analysis shows that:

- A. The baseline risk assessment identified unacceptable cancer and non-carcinogenic health risks for residents if they used groundwater in the area for drinking and/or showering. The groundwater was contaminated with vinyl chloride (deep sand and gravel aquifer), beryllium and manganese (upper surficial sand aquifer), and arsenic (two municipal wells). The risks for all other potential exposure pathways were within acceptable levels established by U.S. EPA.
- B. Exposure to potential exposure pathways identified in the baseline risk assessment were re-evaluated based on proposed uses that have been suggested by members of the community. Possible reuse scenarios included recreational fields (e.g., baseball, soccer, football, lacrosse.), playgrounds, off-leash dog areas, trails for non-motorized activities, an archery range, model airplane flying, golf driving range, nature areas, picnic tables, special events (e.g., concerts, festivals using portable equipment). None of the assessed media (air, surface soil, surface water, sediment, groundwater, or leachate) posed unacceptable risks to exposed populations under the reuse scenarios.

- C. Ecological risks based on new screening criteria were minimal, and the one contaminant exceeding short-term and long-term standards, was not detected at levels that exceed background levels.

IV. IMPLICATIONS FOR MODIFYING FENCE, SIGN, AND GATE REQUIREMENTS

While conducting the baseline risk assessment, exposure scenarios to determine risks relied upon assumptions for a child/teenage trespasser experiencing incidental ingestion and dermal contact with surface soil and contact with Sequoit Creek surface water and sediment. A trespasser was considered to be representative of a potential recreational user. Trespassers between the age of 6 and 16 years of age were assumed to ingest 110 mg of soil for 43 days a year over ten years for incidental ingestion and dermal contact with surface soil. For all soil COCs, baseline risk assessment results for direct contact with surface soil totaled 9×10^{-9} , or more than 100 times below the target risk level for cancer, and 6,000 times below risks associated with non-carcinogenic health effects (hazard index of 0.00017). Since the baseline risk assessment, the Site has been covered with clean soil, thereby reducing the risks associated with surface soil contact.

Exposure assumptions for a child/teenager trespasser wading or playing in Sequoit Creek include children age 6 to 16 years of age to be exposed for one hour a day, 35 days a year over ten years. Baseline risk results for all direct contact with sediment COCs totaled 1×10^{-8} , or 100 times below the level of concern, and results for other health effects totaled 0.00021, or almost 5,000 times below the concern level for non-cancer health risks. Direct contact with surface water for non-cancer health effects totaled 0.005, or 200 times below the level of concern.

Present monitoring results indicate that the chemicals present on-site pose no danger to trespassers, and to on-site recreational users. There is no need to put or keep in place remedial measures designed to prevent persons from entering the Site, assuming other remedial measures (e.g., the cap, and leachate and gas collection systems) are operating correctly.

V. IMPACTS OF MODIFYING ACCESS RESTRICTIONS ON OTHER REMEDIAL COMPONENTS

The landfill cap, gas and leachate collection, and leachate treatment will need to be maintained in order for the remedy to be protective of human health and the environment. To ensure the remedy remains protective, no digging will be allowed beneath the one-foot layer of clean topsoil which is now covering the cap of the landfill. The cap beneath the topsoil consists of at least two feet of compacted clay, which must remain undisturbed and unbreached. In addition, access to all leachate and gas extraction wells, vents, flares, and other components of the remedy must be granted at all times, and destruction or impairment of these structures is prohibited.

VI. IMPACTS OF MODIFYING ACCESS RESTRICTIONS ON GROUNDWATER, SURFACE WATER, AND AIR

Deleting certain access restrictions will have no negative impact on groundwater, surface water, and air affected by the Site. The cap will prevent hazardous waste from entering the air and surface water so long as the cap is not breached and the gas/leachate collection system is maintained in accordance with approved operation and maintenance plans. Modifying access restrictions and allowing for uses approved by EPA on top of the one foot of clean topsoil will not affect the integrity of the cap.

VII. RATIONALE FOR REFINING RESTRICTIVE COVENANTS ON DEEDS

Restrictive covenants for the deed to the Site were selected in the ROD to protect the integrity of the constructed remedy by limiting Site use and development. The covenants would notify a potential purchaser of the property of the past landfill activities, and assert that the land use must be restricted to ensure the continued integrity of the waste containment remedy. The exposure pathway and risk assessment analysis indicate that the Site is safe for uses as approved by EPA so long as the cap, leachate and gas extraction wells, vents, and methane flare are maintained. In addition, the well-heads must stay locked and remain in place and accessible only to landfill maintenance personnel. As such, the restrictive covenants for the deed shall prevent or limit Site uses and development not approved by U.S. EPA. Parties interested in digging into or displacing soil on the Site in excess of the 12 inch limit, must give prior notice to U.S. EPA. Such an interested party will be prohibited from digging into or displacing soil beyond one foot from the surface, unless the interested party prepares an engineering study that documents that the integrity of the landfill cap will not be compromised by such digging or displacement of soil and U.S. EPA approves the study and the request to dig beyond one foot from the surface.

VIII. CONCLUSIONS

The August 2003, exposure pathway analysis and risk assessment for the H.O.D. Landfill Site provided valuable information relating to which remedial components are necessary to protect the integrity of the remedy so that it remains protective of human health and the environment under the proposed final end use plan. Based on this analysis, the modified remedy includes only one significant change from the ROD - modifying the requirements with regard to the access restrictions. This change in the selected remedy will reduce costs associated with the remedy and promote U.S. EPA's agenda to support the successful reuse of Superfund Sites. RMT, Inc. performed the exposure pathway analysis and risk assessment on behalf of the PRP, WMII. The report was carefully reviewed and then approved by U.S. EPA. The significant differences from the ROD include modifying access restrictions regarding the existing fencing, signs, and gates, and refining restrictive covenants on deeds for the Site to reflect appropriate uses for the Site that would not affect the integrity of the remedy. In order for the Site to remain

protective of human health and the environment under reuses supported by the Agency, there shall be no digging or displacement of soil beyond one foot of the surface without an engineering study and request to dig or displace soil beyond the one foot limit shall be approved by U.S. EPA. All gas and leachate well head vaults shall remain locked and the flare building and remedial components shall be maintained and secured with fencing, locking gates, locking mechanisms and warning signs, as discussed in detail above.

IX. SUPPORT AGENCY COMMENTS

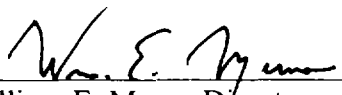
The State of Illinois concurs with this ESD. The Illinois Environmental Protection Agency (IEPA) has participated with EPA to coordinate reuse efforts at the HOD Landfill Site and has participated with the review of the Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan, August, 2003 and provided its approval of the document.

X. AFFIRMATION OF THE STATUTORY DETERMINATIONS

Based on information collected during the exposure pathway analysis and risk assessment, changes have been made to the remedy selected in the ROD. U.S. EPA and IEPA believe that the remedy remains protective of human health and the environment and complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action. The modified remedy does not affect the original remedy regarding utilization of permanent solutions and alternate treatment technologies to the maximum extent practicable.

XI. PUBLIC PARTICIPATION ACTIVITIES

Public participation activities at the HOD Landfill have increased since the end of remedial action completion activities. A public meeting was held in June 2002, where EPA officials explained safety factors regarding the Site cleanup and potential reuse. EPA reuse contractors' presented conceptual reuse plans and a followup public meeting was held in July 2002, which included a tour of the Site to demonstrate safety features. In August 2002, EPA published a fact sheet explaining that construction has been completed, what was done, and posed questions and answers related to the goal of Site reuse. A notice has been issued explaining that the ESD has been incorporated in the Administrative Record for the Site which is located at the Antioch Public District Library in Antioch, IL and at U.S. EPA Region 5 offices in Chicago, IL. A public information meeting is scheduled for September 2003, in Antioch, IL, to explain the significant changes to the remedy.


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8/28/03
Date

ATTACH ADMINISTRATIVE RECORD UPDATE #16
August12, 2003

No.	Date	Author	Recipient	Title/Description
1.	April 2002	WWIL	U.S. EPA	Operations, Maintenance, and Monitoring Progress Report No. 1 First Quarter 2002 O & M Period (January 1, to March 30, 2002) HOD Landfill Site, Antioch, Illinois
2.	August 2002	WWIL	U.S. EPA	Operations, Maintenance, and Monitoring Progress Report No.2 Second Quarter 2002 O & M Period (April 1 to March 30, 2002 HOD Landfill Site, Antioch, Illinois
3.	November 2002	WWIL	U.S. EPA	Operations, Maintenance, and Monitoring Progress Report No.3 Third Quarter 2002 O & M Period (July 1 to September 30, 2002 HOD Landfill Site, Antioch, Illinois
4.	August 2003	RMT Inc.	U.S. EPA	Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan